

ABSTRACT OF THE DISCLOSURE

A laser diode array is formed on a substrate (310) in which a number of parallel grooves (312) are formed. A metal layer (410) is formed on the grooves (312). Laser diode bars (314) are fitted in alternate grooves, and every other groove is left vacant to serve as a cooling channel (316). The array is immersion cooled in a housing (210). Liquid coolant is circulated through the housing (210) and through a heat exchanger (216). The liquid coolant flows over a major surface of the substrate (310) and through the cooling channels (316). Thus, heat is removed by circulating fluid from three sides of the laser diode bars (314). Such high-performance cooling permits the laser diode array to have a greater power density.